Incozol 2

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1 Product identifier

Trade name	:	Incozol 2
UK REACH Registration Number	:	UK-01-1858223290-8-0001
Substance name	:	N-Butyl-2-(1-ethylpentyl)-1,3-oxazolidine
EC-No.	:	425-660-0

1.2 Relevant identified uses of the substance or mixture and uses advised against

Product use	:	Intermediate

1.3 Details of the supplier of the safety data sheet

Company name of supplier	:	Incorez Limited Miller Street Preston Lancashire PR1 1EA
Telephone	:	+44(0)1772 201964
Telefax	:	+44(0)1772 255670
E-mail address of person responsible for the SDS	:	sds@incorez.com

1.4 Emergency telephone number

National Chemical Emergency Centre (NCEC)
24 Hour Emergency Telephone Number +44 870 190 6777

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification (REGULATION (EC) No 1272/2008)

Long-term (chronic) aquatic hazard, Category 2	H411: Toxic to aquatic life with long lasting effects.

2.2 Label elements

Labelling (REGULATION (EC) No 1272/2008)

Hazard pictograms :

Hazard statements	:	H411	Toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**

P273	Avoid release to the environment.
Response:	
P391	Collect spillage.
Disposal:	
P501	Dispose of contents/container in accordance with local regulation.

2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information: The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 3: Composition/information on ingredients

3.1 Substances

EC-No. : 425-660-0

Chemical nature : Substance

Components

Chemical name	CAS-No. EC-No.	Concentration (% w/w)	M-Factor, SCL, ATE
N-Butyl-2-(1-ethylpentyl)-1,3-oxazolidine	165101-57-5 425-660-0	100	

SECTION 4: First aid measures

4.1 Description of first aid measures

General advice : No hazards which require special first aid measures.

If inhaled : Move to fresh air.

In case of skin contact : Take off contaminated clothing and shoes immediately.
Wash off with soap and plenty of water.

In case of eye contact : Remove contact lenses.
Keep eye wide open while rinsing.
If eye irritation persists, consult a specialist.

If swallowed : Do not induce vomiting without medical advice.
Rinse mouth with water.
Do not give milk or alcoholic beverages.
Never give anything by mouth to an unconscious person.

4.2 Most important symptoms and effects, both acute and delayed

Symptoms : See Section 11 for more detailed information on health effects and symptoms.

Risks : No known significant effects or hazards.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment : Treat symptomatically.

SECTION 5: Firefighting measures

5.1 Extinguishing media

Suitable extinguishing media : In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction.

5.2 Special hazards arising from the substance or mixture

Specific hazards during firefighting : Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products : No hazardous combustion products are known

5.3 Advice for firefighters

Special protective equipment : In the event of fire, wear self-contained breathing apparatus.

for firefighters

Further information	:	Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal precautions	:	For personal protection see section 8.

6.2 Environmental precautions

Environmental precautions	:	Do not flush into surface water or sanitary sewer system. If the product contaminates rivers and lakes or drains inform respective authorities.

6.3 Methods and material for containment and cleaning up

Methods for cleaning up	:	Soak up with inert absorbent material (e.g. sand, silica gel, acid binder, universal binder, sawdust). Keep in suitable, closed containers for disposal.

6.4 Reference to other sections

For personal protection see section 8.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

Advice on safe handling	:	Avoid exceeding the given occupational exposure limits (see section 8). For personal protection see section 8. Follow standard hygiene measures when handling chemical products
Advice on protection against fire and explosion	:	Normal measures for preventive fire protection.
Hygiene measures	:	Handle in accordance with good industrial hygiene and safety practice. When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Requirements for storage areas and containers	:	Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully re-sealed and kept upright to prevent leakage. Store in accordance with local regulations.

Further information on storage stability : No decomposition if stored and applied as directed.

7.3 Specific end use(s)

Specific use(s) : Consult most current local Product Data Sheet prior to any use.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure Limits

Components	CAS-No.	Value type (Form of exposure)	Control parameters *	Basis *

Contains no substances with occupational exposure limit values.

8.2 Exposure controls

Engineering measures

Maintain air concentrations below occupational exposure standards.
Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection : Safety glasses with side-shields conforming to EN166
Eye wash bottle with pure water

Hand protection : Chemical-resistant, impervious gloves complying with an approved standard must be worn at all times when handling chemical products. Reference number EN 374. Follow manufacturer specifications.

Suitable for short time use or protection against splashes:
Butyl rubber/nitrile rubber gloves (> 0,1 mm)
Contaminated gloves should be removed.
Suitable for permanent exposure:
Viton gloves (0.4 mm),
breakthrough time >30 min.

Skin and body protection : Protective clothing (e.g. Safety shoes acc. to EN ISO 20345, long-sleeved working clothing, long trousers). Rubber aprons and protective boots are additionaly recommended for mixing and stirring work.

Respiratory protection : No special measures required.

Environmental exposure controls

General advice : Do not flush into surface water or sanitary sewer system.
If the product contaminates rivers and lakes or drains inform respective authorities.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Physical state	:	liquid
Colour	:	light yellow
Odour	:	sweet
Melting point/range / Freezing point	:	No data available
Boiling point/boiling range	:	ca. 260 °C
Flammability (solid, gas)	:	No data available

Upper/lower flammability or explosive limits

Upper explosion limit / Upper flammability limit	:	No data available
Lower explosion limit / Lower flammability limit	:	No data available
Flash point	:	103,1 °C Method: closed cup
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
pH	:	Not applicable

Viscosity

Viscosity, dynamic	:	ca. 20 mPa.s (20 °C)
Viscosity, kinematic	:	> 7 mm2/s (40 °C)

Solubility(ies)

Water solubility	:	insoluble
Partition coefficient: n-octanol/water	:	No data available
Vapour pressure	:	ca. 0,025 hPa
Density	:	ca. 0,872 g/cm3 (20 °C)
Relative vapour density	:	No data available
Particle characteristics	:	No data available

9.2 Other information

No data available

SECTION 10: Stability and reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

The product is chemically stable.

10.3 Possibility of hazardous reactions

Hazardous reactions : Stable under recommended storage conditions.

10.4 Conditions to avoid

Conditions to avoid : No data available

10.5 Incompatible materials

Materials to avoid : No data available

10.6 Hazardous decomposition products

No decomposition if stored and applied as directed.

SECTION 11: Toxicological information

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity

Not classified based on available information.

Skin corrosion/irritation

Not classified based on available information.

Serious eye damage/eye irritation

Not classified based on available information.

Respiratory or skin sensitisation

Skin sensitisation

Not classified based on available information.

Respiratory sensitisation

Not classified based on available information.

Germ cell mutagenicity

Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

STOT - single exposure
Not classified based on available information.

STOT - repeated exposure
Not classified based on available information.

Aspiration toxicity
Not classified based on available information.

11.2 Information on other hazards

Endocrine disrupting properties

Product:

Assessment	:	The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

SECTION 12: Ecological information

12.1 Toxicity

Components:

N-Butyl-2-(1-ethylpentyl)-1,3-oxazolidine:

Toxicity to fish	:	LC50 (Fish): 20 mg/l Exposure time: 96 h
Toxicity to daphnia and other aquatic invertebrates	:	EC50 (Daphnia magna (Water flea)): 9,5 mg/l Exposure time: 48 h
Toxicity to algae/aquatic plants	:	IC50 (Scenedesmus capricornutum (fresh water algae)): 12 mg/l Exposure time: 72 h

12.2 Persistence and degradability
No data available

12.3 Bioaccumulative potential
No data available

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

Product:

Assessment : This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher..

12.6 Endocrine disrupting properties

Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

12.7 Other adverse effects

Product:

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

13.1 Waste treatment methods

Product : The generation of waste should be avoided or minimized wherever possible.
Empty containers or liners may retain some product residues.
This material and its container must be disposed of in a safe way.
Dispose of surplus and non-recyclable products via a licensed waste disposal contractor.
Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.
Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: Transport information

14.1 UN number or ID number

ADR	:	UN 3082
IMDG	:	UN 3082
IATA	:	UN 3082

14.2 UN proper shipping name

ADR	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (N-Butyl-2-(1-ethylpentyl)-1,3-oxazolidine)
IMDG	:	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (N-Butyl-2-(1-ethylpentyl)-1,3-oxazolidine)
IATA	:	Environmentally hazardous substance, liquid, n.o.s. (N-Butyl-2-(1-ethylpentyl)-1,3-oxazolidine)

14.3 Transport hazard class(es)

		Class	Subsidiary risks
ADR	:	9	
IMDG	:	9	
IATA	:	9	

14.4 Packing group

ADR

Packing group	:	III
Classification Code	:	M6
Hazard Identification Number	:	90
Labels	:	9
Tunnel restriction code	:	(-)

IMDG

Packing group	:	III
Labels	:	9
EmS Code	:	F-A, S-F

IATA (Cargo)

Packing instruction (cargo aircraft)	:	964
Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

IATA (Passenger)

Packing instruction (passenger aircraft)	:	964

Packing instruction (LQ)	:	Y964
Packing group	:	III
Labels	:	Miscellaneous

14.5 Environmental hazards

ADR
Environmentally hazardous : yes

IMDG
Marine pollutant : yes

IATA (Passenger)
Environmentally hazardous : yes

IATA (Cargo)
Environmentally hazardous : yes

14.6 Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Relevant EU provisions transposed through retained EU law

UK REACH List of restrictions (Annex 17)	:	Not applicable
UK REACH Candidate list of substances of very high concern (SVHC) for Authorisation	:	Not applicable
The Persistent Organic Pollutants Regulations (retained Regulation (EU) 2019/1021 as amended for Great Britain)	:	Not applicable
International Chemical Weapons Convention (CWC) Schedules of Toxic Chemicals and Precursors	:	Not applicable
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer	:	Not applicable
UK REACH List of substances subject to authorisation (Annex XIV)	:	Not applicable
GB Export and import of hazardous chemicals - Prior Informed Consent (PIC) Regulation	:	Not applicable

Control of Major Accident Hazards Regulations 2015 (COMAH)	E2	ENVIRONMENTAL HAZARDS

Volatile organic compounds : Law on the incentive tax for volatile organic compounds (VOCV)
Volatile organic compounds (VOC) content: < 0% w/w
no VOC duties

Directive 2010/75/EU of 24 November 2010 on industrial emissions (integrated pollution prevention and control)
Volatile organic compounds (VOC) content: < 0% w/w

If other regulatory information applies that is not already provided elsewhere in the Safety Data Sheet, then it is described in this subsection.

Health, safety and environmental regulation/legislation specific for the substance or mixture: : Environmental Protection Act 1990 & Subsidiary Regulations
Health and Safety at Work Act 1974 & Subsidiary Regulations
Control of Substances Hazardous to Health Regulations (COSHH)
May be subject to the Control of Major Accident Hazards Regulations (COMAH), and amendments.

15.2 Chemical safety assessment

A Chemical Safety Assessment has been carried out for this substance by the supplier.

SECTION 16: Other information

Full text of other abbreviations

ADR	:	European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS	:	Chemical Abstracts Service
DNEL	:	Derived no-effect level
EC50	:	Half maximal effective concentration
GHS	:	Globally Harmonized System
IATA	:	International Air Transport Association
IMDG	:	International Maritime Code for Dangerous Goods
LD50	:	Median lethal dosis (the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals)
LC50	:	Median lethal concentration (concentrations of the chemical in air that kills 50% of the test animals during the observation period)
MARPOL	:	International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978
OEL	:	Occupational Exposure Limit
PBT	:	Persistent, bioaccumulative and toxic
PNEC	:	Predicted no effect concentration
REACH	:	Regulation (EC) No 1907/2006 of the European Parliament

and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency

SVHC : Substances of Very High Concern
vPvB : Very persistent and very bioaccumulative

Further information

The information contained in this Safety Data Sheet corresponds to our level of knowledge at the time of publication. All warranties are excluded. Our most current General Sales Conditions shall apply. Please consult the product data sheet prior to any use and processing.

Changes as compared to previous version !

GB / EN

Annex to the extended safety data sheet (eSDS)

1. Overview of exposure scenarios (ES)

ES number	ES Code	Scenario name	Use descriptor	Page
1	1	Industrial manufacture of the substance	ERC 1; PROC 1, 2, 3, 4, 8B, 9	14
2	2	Formulation of sealants and adhesives	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9	22
3	3	Formulation of coatings and fillers	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9	31
4	4	Formulation of polymer preparations	ERC 3; PROC 2, 3, 4, 5, 8A, 8B, 9	40
5	5	Industrial application of sealants and adhesives	ERC 5; PROC 5, 7, 8B, 10, 14	50
6	6	Industrial application of coatings and fillers	ERC 5; PROC 5, 7, 8B, 10, 13	57
7	7	Professional application of sealants and adhesives (indoor)	ERC 8C; PROC 5, 8A, 10, 11, 14	65
8	8	Professional application of sealants and adhesives (outdoor)	ERC 8F; PROC 5, 8A, 10, 11, 14	72
9	9	Professional application of coatings and fillers (indoor)	ERC 8C; PROC 5, 8A, 10, 11, 13	79
10	10	Professional application of coatings and fillers (outdoor)	ERC 8F; PROC 5, 8A, 10, 11, 13	86
11	11	Consumer use of sealants and adhesives (indoor)	ERC 8C; PC 1	92
12	12	Consumer use of sealants and adhesives (outdoor)	ERC 8F; PC 1	98
13	13	Consumer use of coatings and fillers (indoor)	ERC 8C; PC 9a, 9b	104

ES number	ES Code	Scenario name	Use descriptor	Page
14	14	Consumer use of coatings and fillers (outdoor)	ERC 8F; PC 9a, 9b	108

1.1 General information

Human health - Worker

Acute/short term exposure

Peak exposure is considered to be not relevant for the identified use scenarios. Thus, the occupational conditions (OC) which have been implemented to control long term exposure are also sufficient to control acute/short term exposure. Consequently, a quantitative assessment of acute/short term exposure and the subsequent risk assessment are not needed and have not been included in chapter 9 and 10 of the CSR.

Long term exposure

A quantitative risk assessment has been performed in chapter 9 and 10 for all exposure scenarios, i.e. systemic effects after long term inhalation exposure and systemic effects after long term dermal exposure. PROC-specific OCs and RMMs are listed in the chapter 9 tables describing the scenarios. They are found to provide adequate control. If the manufacturer/user complies with these conditions and measurements the likelihood of systemic health effects is avoided.

Human health - Consumer

The substance is used in consumer products. Therefore, a qualitative exposure/risk assessment for the general population is conducted. Selected default scenarios from the ConsExpo fact sheet “Do-it-yourself products” were used as a worst-case scenario for inhalation and dermal exposure.

2.1 Scenario 1: Industrial manufacture of the substance (1)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 1

Free short title	Industrial manufacture of the substance (1)
Systematic title based on use descriptor	ERC 1; PROC 1, 2, 3, 4, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 1 Production of chemicals

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 1 - Use in closed process, no likelihood of exposure PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

2.2 Conditions of use affecting exposure

2.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 1

Operational conditions	
Annual site tonnage	99 to/year
Daily amount used at site	4,950 kg/day
Release times per year	20 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	5 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0.010 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Other modified EUSES values	
Fraction released to waste water (Femis.water)	0 % *(justification: All waste solvents will be sent to disposal companies. Water of reaction is distilled off and it is unlikely that this will contain appreciable amounts of the substance or its degradation products. Local STP will get unintentional spillages or washings only.)*

2.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1

Name of contributing scenario	PROC 1 Use in closed process, no likelihood of exposure

Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

2.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week

Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

2.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

2.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

2.3 Exposure estimation

2.3.1 Contributing Scenario (1) controlling environmental exposure for ERC1
Industrial manufacture of the substance

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

2.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	6.41E-8 mg/L	0.0064 mg/L	0.00001	4.94E8
Freshwater sediment	2.51E-7 mg/kg_{dwt}	1.047 mg/kg_{dwt}	2.40E-7	2.07E10
Marine water	5.91E-9 mg/L	0.00064 mg/L	9.24E-6	5.36E8

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Marine water sediment	2.31E-8 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	2.21E-7	2.24E10

2.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000106 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	0.000348	1.41E7

2.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0 mg/L	18 mg/L	0	∞

2.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 1
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.006857 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.000411
inhalation, longterm systemic	0.094742 mg/m^3	29.4 mg/m^3	0.003223
Combined routes	0.020392 mg/kg_{bw}/day	-	0.003633

2.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 2
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.016424
inhalation, longterm systemic	9.474 mg/m³	29.4 mg/m³	0.322251
Combined routes	1.628 mg/kg$_{bw}$/day	-	0.338675

2.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 3
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	28.423 mg/m³	29.4 mg/m³	0.966752
Combined routes	4.198 mg/kg$_{bw}$/day	-	0.974964

2.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 4
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.200 mg/m³	29.4 mg/m³	0.006803
Combined routes	1.4 mg/kg$_{bw}$/day	-	0.088924

2.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8B
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	2.809 mg/kg$_{bw}$/day	-	0.179889

2.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 9
Industrial manufacture of the substance

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	1.437 mg/kg$_{bw}$/day	-	0.097768

3.1 Scenario 2: Formulation of sealants and adhesives (2)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 2

Free short title	Formulation of sealants and adhesives (2)
Systematic title based on use descriptor	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9
Name of constributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

3.2 Conditions of use affecting exposure

3.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

Operational conditions	
Annual site tonnage	99 to/year
Daily amount used at site	450 kg/day
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	3.6 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	UserDefined_FEICA SPERC 2.1c.v2 (User-defined SpERC in accordance with the correspondent SpERC Fact Sheet (Reference: Date February 2013) provided by the association FEICA. For RMM specifications please refer to the correspondent SpERC factsheet.)

3.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors

Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

3.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

3.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %

Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

3.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

3.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

3.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)

Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

3.3 Exposure estimation

3.3.1 Contributing Scenario (1) controlling environmental exposure for ERC2
Formulation of sealants and adhesives

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

3.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	6.41E-8 mg/L	0.0064 mg/L	0.00001	4.49E7
Freshwater sediment	2.51E-7 mg/kg_{dwt}	1.047 mg/kg_{dwt}	2.40E-7	1.88E9
Marine water	5.91E-9 mg/L	0.00064 mg/L	9.24E-6	4.87E7
Marine water sediment	2.31E-8 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	2.21E-7	2.04E9

3.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000076 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	0.000251	1.78E6

3.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0 mg/L	18 mg/L	0	∞

3.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.016424
inhalation, longterm systemic	9.474 mg/m³	29.4 mg/m³	0.322251
Combined routes	1.628 mg/kg$_{bw}$/day	-	0.338675

3.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	28.423 mg/m³	29.4 mg/m³	0.966752
Combined routes	4.198 mg/kg$_{bw}$/day	-	0.974964

3.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total expo-

sure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.200 mg/m³	29.4 mg/m³	0.006803
Combined routes	1.4 mg/kg$_{bw}$/day	-	0.088924

3.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	3.029 mg/kg$_{bw}$/day	-	0.23227

3.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	4.5 mg/m³	29.4 mg/m³	0.153061
Combined routes	3.386 mg/kg$_{bw}$/day	-	0.317304

3.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	2.809 mg/kg$_{bw}$/day	-	0.179889

3.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	1.437 mg/kg$_{bw}$/day	-	0.097768

4.1 Scenario 3: Formulation of coatings and fillers (3)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 3

Free short title	Formulation of coatings and fillers (3)
Systematic title based on use descriptor	ERC 2; PROC 2, 3, 4, 5, 8A, 8B, 9

Name of constributing environmental scenario and corresponding ERC	ERC 2 Formulation of preparations
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

4.2 Conditions of use affecting exposure

4.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 2

Operational conditions	
Annual site tonnage	99 to/year
Daily amount used at site	440 kg/day
Release times per year	225 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	0.600 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	CEPE SPERC 2.1b1.v1 - CEPE - Formulation of Organic Solvent Borne Coatings and Inks - Small Scale (<100 tpa solvent use) - VOC

4.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors

Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

4.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

4.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %

Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

4.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	

Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

4.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

4.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)

Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

4.3 Exposure estimation

4.3.1 Contributing Scenario (1) controlling environmental exposure for ERC2
Formulation of coatings and fillers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

4.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	6.41E-8 mg/L	0.0064 mg/L	0.00001	4.39E7
Freshwater sediment	2.51E-7 mg/kg_{dwt}	1.047 mg/kg_{dwt}	2.40E-7	1.84E9
Marine water	5.91E-9 mg/L	0.00064 mg/L	9.24E-6	4.76E7
Marine water sediment	2.31E-8 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	2.21E-7	1.99E9

4.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000013 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	0.000042	1.04E7

4.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0 mg/L	18 mg/L	0	∞

4.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.016424
inhalation, longterm systemic	9.474 mg/m³	29.4 mg/m³	0.322251
Combined routes	1.628 mg/kg$_{bw}$/day	-	0.338675

4.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.008212
inhalation, longterm systemic	28.423 mg/m³	29.4 mg/m³	0.966752
Combined routes	4.198 mg/kg$_{bw}$/day	-	0.974964

4.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total expo-

sure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.200 mg/m³	29.4 mg/m³	0.006803
Combined routes	1.4 mg/kg$_{bw}$/day	-	0.088924

4.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	3.029 mg/kg$_{bw}$/day	-	0.23227

4.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	4.5 mg/m³	29.4 mg/m³	0.153061
Combined routes	3.386 mg/kg$_{bw}$/day	-	0.317304

4.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	2.809 mg/kg$_{bw}$/day	-	0.179889

4.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	1.437 mg/kg$_{bw}$/day	-	0.097768

5.1 Scenario 4: Formulation of polymer preparations (4)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 4

Free short title	Formulation of polymer preparations (4)
Systematic title based on use descriptor	ERC 3; PROC 2, 3, 4, 5, 8A, 8B, 9

Name of constributing environmental scenario and corresponding ERC	ERC 3 Formulation in articles
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 2 - Use in closed, continuous process with occasional controlled exposure PROC 3 - Use in closed batch process (synthesis or formulation) PROC 4 - Use in batch and other process (synthesis) where opportunity for exposure arises PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 9 - Transfer of chemicals into small containers (dedicated filling line)

5.2 Conditions of use affecting exposure

5.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 3

Operational conditions	
Annual site tonnage	99 to/year
Daily amount used at site	450 kg/day
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	3.6 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	

SpERC	UserDefined_CEPE SPERC 2.1b.v1_analogue (User-defined SpERC with release fractions in analogy to the formulation SpERC provided by CEPE (CEPE SPERC 2.1b.v1 (Reference: AJN/ajns0319b, Date: 16 October 2010)) and FEICA (FEICA SPERC 2.1c.v2 (Reference:Reference Date February 2013)). For details on these SpERCs and the appropriate risk management measures (RMMs) please refer to the corresponding SpERC factsheets published by the associations CEPE and FEICA.)

5.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2

Name of contributing scenario	PROC 2 Use in closed, continuous process with occasional controlled exposure
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3

Name of contributing scenario	PROC 3 Use in closed batch process (synthesis or formulation)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	

Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	240 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no

5.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4

Name of contributing scenario	PROC 4 Use in batch and other process (synthesis) where opportunity for exposure arises
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

5.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

5.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2

Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

5.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

5.2.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9

Name of contributing scenario	PROC 9 Transfer of chemicals into small containers (dedicated filling line)

Product characteristics	
Physical state	liquid
Concentration in substance	100 %
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

5.3 Exposure estimation

5.3.1 Contributing Scenario (1) controlling environmental exposure for ERC3
Formulation of polymer preparations

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

5.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	6.41E-8 mg/L	0.0064 mg/L	0.00001	4.49E7
Freshwater sediment	2.51E-7 mg/kg_{dwt}	1.047 mg/kg_{dwt}	2.40E-7	1.88E9
Marine water	5.91E-9 mg/L	0.00064 mg/L	9.24E-6	4.87E7
Marine water sediment	2.31E-8 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	2.21E-7	2.04E9

5.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000076 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	0.000251	1.78E6

5.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0 mg/L	18 mg/L	0	∞

5.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 2
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.274286 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.016424
inhalation, longterm systemic	9.474 mg/m^3	29.4 mg/m^3	0.322251
Combined routes	1.628 mg/kg_{bw}/day	-	0.338675

5.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 3
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.137143 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.008212
inhalation, longterm systemic	28.423 mg/m^3	29.4 mg/m^3	0.966752

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
Combined routes	4.198 mg/kg$_{bw}$/day	-	0.974964

5.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 4
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.200 mg/m³	29.4 mg/m³	0.006803
Combined routes	1.4 mg/kg$_{bw}$/day	-	0.088924

5.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 5
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	2 mg/m³	29.4 mg/m³	0.068027
Combined routes	3.029 mg/kg$_{bw}$/day	-	0.23227

5.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 8A
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	4.5 mg/m³	29.4 mg/m³	0.153061
Combined routes	3.386 mg/kg$_{bw}$/day	-	0.317304

5.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 8B
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.460 mg/m³	29.4 mg/m³	0.015646
Combined routes	2.809 mg/kg$_{bw}$/day	-	0.179889

5.3.8 Contributing Scenario (8) controlling industrial worker exposure for PROC 9
Formulation of polymer preparations

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	1.371 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.082121
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated	0.460 mg/m³	29.4 mg/m³	0.015646

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
using ART version 1.5.)			
Combined routes	1.437 mg/kg_{bw}/day	-	0.097768

6.1 Scenario 5: Industrial application of sealants and adhesives (5)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 5

Free short title	Industrial application of sealants and adhesives (5)
Systematic title based on use descriptor	ERC 5; PROC 5, 7, 8B, 10, 14
Name of constributing environmental scenario and corresponding ERC	ERC 5 Industrial use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

6.2 Conditions of use affecting exposure

6.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 5

Operational conditions	
Annual site tonnage	99 to/year
Daily amount used at site	450 kg/day
Release times per year	220 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	1.7 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %

Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	FEICA SPERC 5.1b.v1 - FEICA - Industrial Use of Substances other than Solvents in Transportation (Automotive/aircraft/rail vehicles) / industrial Building Construction Adhesives

6.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

6.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Product characteristics	
Physical state	liquid

Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

6.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	

Protective gloves	No
Respiratory protection	90 %

6.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

6.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	

Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

6.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

6.3 Exposure estimation

6.3.1 Contributing Scenario (1) controlling environmental exposure for ERC5
Industrial application of sealants and adhesives

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

6.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	6.41E-8 mg/L	0.0064 mg/L	0.00001	4.49E7
Freshwater sediment	2.51E-7 mg/kg_{dwt}	1.047 mg/kg_{dwt}	2.40E-7	1.88E9
Marine water	5.91E-9 mg/L	0.00064 mg/L	9.24E-6	4.87E7
Marine water sediment	2.31E-8 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	2.21E-7	2.04E9

6.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000036 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	0.000118	3.76E6

6.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0 mg/L	18 mg/L	0	∞

6.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 $mg/kg_{bw}/day$	16.7 $mg/kg_{bw}/day$	0.164243
inhalation, longterm systemic	9.474 mg/m^3	29.4 mg/m^3	0.322251

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
Combined routes	4.096 mg/kg$_{bw}$/day	-	0.486494

6.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	8.571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.513259
inhalation, longterm systemic	5.685 mg/m³	29.4 mg/m³	0.19335
Combined routes	9.384 mg/kg$_{bw}$/day	-	0.70661

6.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	8.571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.513259
inhalation, longterm systemic	11.369 mg/m³	29.4 mg/m³	0.386701
Combined routes	10.196 mg/kg$_{bw}$/day	-	0.89996

6.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	9.474 mg/m³	29.4 mg/m³	0.322251
Combined routes	4.096 mg/kg$_{bw}$/day	-	0.486494

6.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	5.486 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.328486
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.310 mg/m³	29.4 mg/m³	0.010544
Combined routes	5.53 mg/kg$_{bw}$/day	-	0.33903

6.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 14
Industrial application of sealants and adhesives

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.685714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.041061
inhalation, longterm systemic	9.474 mg/m³	29.4 mg/m³	0.322251
Combined routes	2.039 mg/kg$_{bw}$/day	-	0.363311

7.1 Scenario 6: Industrial application of coatings and fillers (6)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenari-

os are described in the respective subchapters.

Description of ES 6

Free short title	Industrial application of coatings and fillers (6)
Systematic title based on use descriptor	ERC 5; PROC 5, 7, 8B, 10, 13
Name of constributing environmental scenario and corresponding ERC	ERC 5 Industrial use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 7 - Industrial spraying PROC 7 - Industrial spraying PROC 8b - Transfer of chemicals from/to vessels/ large containers at dedicated facilities PROC 10 - Roller application or brushing PROC 13 - Treatment of articles by dipping and pouring

7.2 Conditions of use affecting exposure

7.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 5

Operational conditions	
Annual site tonnage	99 to/year
Daily amount used at site	440 kg/day
Release times per year	225 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	2 %
Release fraction to wastewater from process	0 %
Release fraction to soil from process	0 %
Fraction tonnage to region	100 %
Fraction used at main source	100 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day
Risk management measures	
SpERC	CEPE SPERC 5.1a.v1 - CEPE - application - industrial - spraying - indoor use - solids

7.2.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

7.2.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	

Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	yes (inhalation 95 %)
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

7.2.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7

Name of contributing scenario	PROC 7 Industrial spraying
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	90 %

7.2.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B

Name of contributing scenario	PROC 8b Transfer of chemicals from/to vessels/ large containers at dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*

Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

7.2.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No

Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

7.2.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	industrial
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

7.3 Exposure estimation

7.3.1 Contributing Scenario (1) controlling environmental exposure for ERC5
Industrial application of coatings and fillers

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

7.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	6.41E-8 mg/L	0.0064 mg/L	0.00001	4.39E7

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater sediment	2.51E-7 mg/kg_{dwt}	1.047 mg/kg_{dwt}	2.40E-7	1.84E9
Marine water	5.91E-9 mg/L	0.00064 mg/L	9.24E-6	4.76E7
Marine water sediment	2.31E-8 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	2.21E-7	1.99E9

7.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	0.000042 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	0.000139	3.13E6

7.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0 mg/L	18 mg/L	0	∞

7.3.2 Contributing Scenario (2) controlling industrial worker exposure for PROC 5
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.164243
inhalation, longterm systemic	9.474 mg/m^3	29.4 mg/m^3	0.322251
Combined routes	4.096 mg/kg_{bw}/day	-	0.486494

7.3.3 Contributing Scenario (3) controlling industrial worker exposure for PROC 7
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total expo-

sure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	8.571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.513259
inhalation, longterm systemic	5.685 mg/m³	29.4 mg/m³	0.19335
Combined routes	9.384 mg/kg$_{bw}$/day	-	0.70661

7.3.4 Contributing Scenario (4) controlling industrial worker exposure for PROC 7
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	8.571 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.513259
inhalation, longterm systemic	11.369 mg/m³	29.4 mg/m³	0.386701
Combined routes	10.196 mg/kg$_{bw}$/day	-	0.89996

7.3.5 Contributing Scenario (5) controlling industrial worker exposure for PROC 8B
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	9.474 mg/m³	29.4 mg/m³	0.322251
Combined routes	4.096 mg/kg$_{bw}$/day	-	0.486494

7.3.6 Contributing Scenario (6) controlling industrial worker exposure for PROC 10
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	5.486 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.328486
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.310 mg/m³	29.4 mg/m³	0.010544
Combined routes	5.53 mg/kg$_{bw}$/day	-	0.33903

7.3.7 Contributing Scenario (7) controlling industrial worker exposure for PROC 13
Industrial application of coatings and fillers

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	18.948 mg/m³	29.4 mg/m³	0.644501
Combined routes	5.45 mg/kg$_{bw}$/day	-	0.808744

8.1 Scenario 7: Professional application of sealants and adhesives (indoor) (7)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 7

Free short title	Professional application of sealants and adhesives (indoor) (7)
Systematic title based on use descriptor	ERC 8C; PROC 5, 8A, 10, 11, 14
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix

Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

8.2 Conditions of use affecting exposure

8.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

8.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	

Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

8.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

8.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

8.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2

Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

8.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

8.3 Exposure estimation

8.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

8.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

8.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

8.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

8.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.164243
inhalation, longterm systemic	18.948 mg/m^3	29.4 mg/m^3	0.644501
Combined routes	5.45 mg/kg_{bw}/day	-	0.808744

8.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.910 mg/m³	29.4 mg/m³	0.030952
Combined routes	2.873 mg/kg$_{bw}$/day	-	0.195195

8.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	5.486 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.328486
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.310 mg/m³	29.4 mg/m³	0.010544
Combined routes	5.53 mg/kg$_{bw}$/day	-	0.33903

8.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	4.286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.25663
inhalation, longterm systemic	11.369 mg/m³	29.4 mg/m³	0.386701
Combined routes	5.91 mg/kg$_{bw}$/day	-	0.64333

8.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14
Professional application of sealants and adhesives (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	0.685714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.041061
inhalation, longterm systemic	18.948 mg/m³	29.4 mg/m³	0.644501
Combined routes	3.393 mg/kg$_{bw}$/day	-	0.685562

9.1 Scenario 8: Professional application of sealants and adhesives (outdoor) (8)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 8

Free short title	Professional application of sealants and adhesives (outdoor) (8)
Systematic title based on use descriptor	ERC 8F; PROC 5, 8A, 10, 11, 14
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 14 - Production of preparations or articles by tabletting, compression, extrusion, pelletisation

9.2 Conditions of use affecting exposure

9.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

9.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

9.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

9.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	

Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

9.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

9.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Name of contributing scenario	PROC 14 Production of preparations or articles by tabletting, compression, extrusion, pelletisation
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

9.3 Exposure estimation

9.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

9.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

9.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

9.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

9.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg_{bw}/day	16.7 mg/kg_{bw}/day	0.164243
inhalation, longterm systemic	13.264 mg/m^3	29.4 mg/m^3	0.451151
Combined routes	4.638 mg/kg_{bw}/day	-	0.615394

9.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	1.1 mg/m³	29.4 mg/m³	0.037415
Combined routes	2.9 mg/kg$_{bw}$/day	-	0.201658

9.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	5.486 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.328486
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.360 mg/m³	29.4 mg/m³	0.012245
Combined routes	5.537 mg/kg$_{bw}$/day	-	0.340731

9.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	4.286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.25663
inhalation, longterm systemic	7.958 mg/m³	29.4 mg/m³	0.27069
Combined routes	5.423 mg/kg$_{bw}$/day	-	0.52732

9.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 14

Professional application of sealants and adhesives (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	0.685714 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.041061
inhalation, longterm systemic	13.264 mg/m³	29.4 mg/m³	0.451151
Combined routes	2.581 mg/kg$_{bw}$/day	-	0.492212

10.1 Scenario 9: Professional application of coatings and fillers (indoor) (9)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 9

Free short title	Professional application of coatings and fillers (indoor) (9)
Systematic title based on use descriptor	ERC 8C; PROC 5, 8A, 10, 11, 13
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring

10.2 Conditions of use affecting exposure

10.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10

Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

10.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

10.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	

Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

10.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	

Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

10.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

10.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	

Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	indoors
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

10.3 Exposure estimation

10.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

10.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

10.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

10.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

10.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	18.948 mg/m³	29.4 mg/m³	0.644501
Combined routes	5.45 mg/kg$_{bw}$/day	-	0.808744

10.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.910 mg/m³	29.4 mg/m³	0.030952
Combined routes	2.873 mg/kg$_{bw}$/day	-	0.195195

10.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	5.486 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.328486
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.310 mg/m³	29.4 mg/m³	0.010544
Combined routes	5.53 mg/kg$_{bw}$/day	-	0.33903

10.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	4.286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.25663
inhalation, longterm systemic	11.369 mg/m³	29.4 mg/m³	0.386701
Combined routes	5.91 mg/kg$_{bw}$/day	-	0.64333

10.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13
Professional application of coatings and fillers (indoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	18.948 mg/m³	29.4 mg/m³	0.644501
Combined routes	5.45 mg/kg$_{bw}$/day	-	0.808744

11.1 Scenario 10: Professional application of coatings and fillers (outdoor) (10)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 10

Free short title	Professional application of coatings and fillers (outdoor) (10)
Systematic title based on use descriptor	ERC 8F; PROC 5, 8A, 10, 11, 13
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing worker scenarios and corresponding PROCs	PROC 5 - Mixing or blending in batch processes (multistage and/or significant contact) PROC 8a - Transfer of chemicals from/to vessels/ large containers at non dedicated facilities PROC 10 - Roller application or brushing PROC 11 - Non industrial spraying PROC 13 - Treatment of articles by dipping and pouring

11.2 Conditions of use affecting exposure

11.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

11.2.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5

Name of contributing scenario	PROC 5 Mixing or blending in batch processes (multistage and/or significant contact)
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no

11.2.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A

Name of contributing scenario	PROC 8a Transfer of chemicals from/to vessels/ large containers at non dedicated facilities
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	

Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

11.2.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10

Name of contributing scenario	PROC 10 Roller application or brushing
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	960 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	No
Respiratory protection	no
Use of external/measured value inhalation	Inhalation exposure was estimated using ART version 1.5.

11.2.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11

Name of contributing scenario	PROC 11 Non industrial spraying
Product characteristics	
Physical state	liquid

Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	1 - 4 hours
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	1,500 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	
Protective gloves	Gloves APF 5 80 %
Respiratory protection	90 %

11.2.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13

Name of contributing scenario	PROC 13 Treatment of articles by dipping and pouring
Product characteristics	
Physical state	liquid
Concentration in substance	20 %, concentration has been considered linearly *(justification: Limit the substance in product to (%): 20)*
Fugacity / Dustiness	low
Frequency and duration of use	
Duration of activity	> 4 hours (default)
Frequency of use	5 days / week
Human factors not influenced by risk management	
Exposed skin surface	480 cm^2
Other given operational conditions affecting workers exposure	
Location	outdoors (30%)
Domain	professional
Technical conditions and measures to control dispersion and exposure	
Local exhaust ventilation	no
Conditions and measures related to personal protection, hygiene and health evaluation	

Protective gloves	No
Respiratory protection	no

11.3 Exposure estimation

11.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

11.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

11.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

11.3.1.3 Microbiological activity in sewage treatment systems

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

11.3.2 Contributing Scenario (2) controlling professional worker exposure for PROC 5
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total expo-

sure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	13.264 mg/m³	29.4 mg/m³	0.451151
Combined routes	4.638 mg/kg$_{bw}$/day	-	0.615394

11.3.3 Contributing Scenario (3) controlling professional worker exposure for PROC 8A
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	1.1 mg/m³	29.4 mg/m³	0.037415
Combined routes	2.9 mg/kg$_{bw}$/day	-	0.201658

11.3.4 Contributing Scenario (4) controlling professional worker exposure for PROC 10
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal, longterm systemic	5.486 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.328486
inhalation, longterm systemic (measured / external: Inhalation exposure was estimated using ART version 1.5.)	0.360 mg/m³	29.4 mg/m³	0.012245
Combined routes	5.537 mg/kg$_{bw}$/day	-	0.340731

11.3.5 Contributing Scenario (5) controlling professional worker exposure for PROC 11
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	4.286 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.25663
inhalation, longterm systemic	7.958 mg/m³	29.4 mg/m³	0.27069
Combined routes	5.423 mg/kg$_{bw}$/day	-	0.52732

11.3.6 Contributing Scenario (6) controlling professional worker exposure for PROC 13
Professional application of coatings and fillers (outdoor)

The quantitative risk characterisation for this worker exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the dermal and inhalatory route together with the total exposure of workers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal, longterm systemic	2.743 mg/kg$_{bw}$/day	16.7 mg/kg$_{bw}$/day	0.164243
inhalation, longterm systemic	13.264 mg/m³	29.4 mg/m³	0.451151
Combined routes	4.638 mg/kg$_{bw}$/day	-	0.615394

12.1 Scenario 11: Consumer use of sealants and adhesives (indoor) (11)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 11

Free short title	Consumer use of sealants and adhesives (indoor) (11)
Systematic title based on use descriptor	ERC 8C; PC 1
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix

Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants

12.2 Conditions of use affecting exposure

12.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

12.2.2 Contributing Scenario (2) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year

Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	0.600 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.2.3 Contributing Scenario (3) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Joint and assembly sealant
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	2.88E4 sec

Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	2 cm^2
Contact rate	50 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.2.4 Contributing Scenario (4) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Glue to surface
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	2.88E4 sec

Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	430 cm^2
Contact rate	30 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	58 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.00E4 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

12.3 Exposure estimation

12.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Consumer use of sealants and adhesives (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

12.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

12.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

12.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

12.3.2 Contributing Scenario (2) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.091324 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.011003
inhalation longterm systemic (Mean concentration yearly)	0.212955 mg/m^3	6.25 mg/m^3	0.034073
oral	-	-	-
Combined routes	0.130248 mg/kg_{bw}/day	-	0.045076

12.3.3 Contributing Scenario (3) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Joint and assembly sealant

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	1.096 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.132035
inhalation longterm systemic (Mean concentration yearly)	0.076117 mg/m^3	6.25 mg/m^3	0.012179
oral	-	-	-
Combined routes	1.11 mg/kg$_{bw}$/day	-	0.144214

12.3.4 Contributing Scenario (4) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (indoor) Glue to surface

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.657534 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.079221
inhalation longterm systemic (Mean concentration yearly)	0.21089 mg/m^3	6.25 mg/m^3	0.033742
oral	-	-	-
Combined routes	0.69608 mg/kg$_{bw}$/day	-	0.112963

13.1 Scenario 12: Consumer use of sealants and adhesives (outdoor) (12)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 12

Free short title	Consumer use of sealants and adhesives (outdoor) (12)
Systematic title based on use descriptor	ERC 8F; PC 1
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants PC 1 Adhesives, Sealants

13.2 Conditions of use affecting exposure

13.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

13.2.2 Contributing Scenario (2) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Mixing loading
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min

Amounts used	
Inhalation	1.00E4 g
Dermal	2 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	215 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	1 m^3
Ventilation rate	1.5 1/h
Release are is constant	
Release area	1,000 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.2.3 Contributing Scenario (3) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Joint and assembly sealant
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	2.88E4 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min

Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	2 cm^2
Contact rate	50 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	1.5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.2.4 Contributing Scenario (4) controlling consumer exposure for PC 1

Name of contributing scenario	PC 1 Adhesives, Sealants
Scenario subtitle	Glue to surface
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Release duration	2.88E4 sec
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min

Amounts used	
Inhalation	1.00E4 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	430 cm^2
Contact rate	30 mg/min
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	58 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	1.00E4 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

13.3 Exposure estimation

13.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Consumer use of sealants and adhesives (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

13.3.1.1 Aquatic compartment (including sediment)

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

13.3.1.2 Terrestrial compartment

Compartments	**PEC**	**PNEC**	**RCR = PEC/PNEC**	**MSafe kg/d**

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

13.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

13.3.2 Contributing Scenario (2) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Mixing loading

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.091324 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.011003
inhalation longterm systemic (Mean concentration yearly)	0.212928 mg/m^3	6.25 mg/m^3	0.034068
oral	-	-	-
Combined routes	0.130243 mg/kg_{bw}/day	-	0.045071

13.3.3 Contributing Scenario (3) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Joint and assembly sealant

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	1.096 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.132035
inhalation longterm systemic (Mean concentration yearly)	0.048128 mg/m^3	6.25 mg/m^3	0.0077

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
oral	-	-	-
Combined routes	1.105 mg/kg_{bw}/day	-	0.139735

13.3.4 Contributing Scenario (4) controlling consumer exposure for PC 1
Consumer use of sealants and adhesives (outdoor) Glue to surface

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.657534 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.079221
inhalation longterm systemic (Mean concentration yearly)	0.210552 mg/m^3	6.25 mg/m^3	0.033688
oral	-	-	-
Combined routes	0.696018 mg/kg_{bw}/day	-	0.112909

14.1 Scenario 13: Consumer use of coatings and fillers (indoor) (13)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenarios are described in the respective subchapters.

Description of ES 13

Free short title	Consumer use of coatings and fillers (indoor) (13)
Systematic title based on use descriptor	ERC 8C; PC 9a, 9b
Name of constributing environmental scenario and corresponding ERC	ERC 8c Wide dispersive indoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 9a Coatings and Paints, thinners, paint removers PC 9b Filler, putties

14.2 Conditions of use affecting exposure

14.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8C

Operational conditions	
ANNUAL_TONNAGE	99 to/year

Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

14.2.2 Contributing Scenario (2) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	General coatings
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.250 g

Human factors not influenced by risk management	
Exposed skin surface (dermal)	108 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	34 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	1.50E5 cm^2
Release temperature	15 °C
Dermal	
Uptake fraction	100 %

14.2.3 Contributing Scenario (3) controlling consumer exposure for PC 9b

Name of contributing scenario	PC 9b Fillers, putties, plasters, modelling clay
Scenario subtitle	Fillers, putties
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	3 per year
Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	3 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.050 g
Human factors not influenced by risk management	

Exposed skin surface (dermal)	22 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	0.600 1/h
Release area increases over time	
Release area	200 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

14.3 Exposure estimation

14.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8C
Consumer use of coatings and fillers (indoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

14.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

14.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

14.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

14.3.2 Contributing Scenario (2) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (indoor) General coatings

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.011416 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.001375
inhalation longterm systemic (Mean concentration yearly)	0.216277 mg/m^3	6.25 mg/m^3	0.034604
oral	-	-	-
Combined routes	0.050946 mg/kg$_{bw}$/day	-	0.03598

14.3.3 Contributing Scenario (3) controlling consumer exposure for PC 9b
Consumer use of coatings and fillers (indoor) Fillers, putties

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.006849 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.000825
inhalation longterm systemic (Mean concentration yearly)	0.607748 mg/m^3	6.25 mg/m^3	0.09724
oral	-	-	-
Combined routes	0.117932 mg/kg$_{bw}$/day	-	0.098065

15.1 Scenario 14: Consumer use of coatings and fillers (outdoor) (14)

This scenario is described by the following combinations of use descriptors. The corresponding contributing scenari-

os are described in the respective subchapters.

Description of ES 14

Free short title	Consumer use of coatings and fillers (outdoor) (14)
Systematic title based on use descriptor	ERC 8F; PC 9a, 9b
Name of constributing environmental scenario and corresponding ERC	ERC 8f Wide dispersive outdoor use resulting in inclusion into or onto a matrix
Name(s) of contributing consumer scenarios and corresponding PCs/ACs	PC 9a Coatings and Paints, thinners, paint removers PC 9b Filler, putties

15.2 Conditions of use affecting exposure

15.2.1 Contributing Scenario (1) controlling environmental exposure for ERC 8F

Operational conditions	
ANNUAL_TONNAGE	99 to/year
Daily amount used at site	0.054247 kg/day
Release times per year	365 days/year
Local freshwater dilution factor	10
Local marine water dilution factor	100
Release fraction to air from process	15 %
Release fraction to wastewater from process	1 %
Release fraction to soil from process	0.500 %
Fraction tonnage to region	10 %
Fraction used at main source	0.200 %
STP	yes
River flow rate	18000 m^3/day
Municipal sewage treatment plant discharge	2000000 L/day

15.2.2 Contributing Scenario (2) controlling consumer exposure for PC 9a

Name of contributing scenario	PC 9a Coatings and paints, thinners, paint removers
Scenario subtitle	General coatings
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	1 per year

Exposure time	480 min
Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	1 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.250 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	108 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	34 m^3
Ventilation rate	1.5 1/h
Release are is constant	
Release area	1.50E5 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

15.2.3 Contributing Scenario (3) controlling consumer exposure for PC 9b

Name of contributing scenario	PC 9b Fillers, putties, plasters, modelling clay
Scenario subtitle	Fillers, putties
Calculation model	ConsExpo
Frequency and duration of use	
Inhalation	
Exposure calculation result type	Mean concentration yearly
Frequency of use	3 per year
Exposure time	480 min

Application duration	480 min
Dermal	
Exposure calculation result type	Internal dose chronic
Frequency of use	3 per year
Product characteristics	
Spray application	no
Product ingredient fraction by weight	100 %
Mol weight matrix	3,000 g/mol
Mass transfer rate	- m/min
Amounts used	
Inhalation	1.00E4 g
Dermal	0.050 g
Human factors not influenced by risk management	
Exposed skin surface (dermal)	22 cm^2
Other given operational conditions affecting consumers exposure	
Inhalation	
Room volume	20 m^3
Ventilation rate	1.5 1/h
Release area increases over time	
Release area	200 cm^2
Release temperature	20 °C
Dermal	
Uptake fraction	100 %

15.3 Exposure estimation

15.3.1 Contributing Scenario (1) controlling environmental exposure for ERC8F
Consumer use of coatings and fillers (outdoor)

The quantitative risk characterisation for this environmental exposure has been calculated using EasyTRA.

The environmental exposure calculation per compartment is based on the algorithms of the EU TGD 2003 Risk Assessment Spreadsheet Model 1.24a.

15.3.1.1 Aquatic compartment (including sediment)

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Freshwater	1.36E-6 mg/L	0.0064 mg/L	0.000212	256.139
Freshwater sediment	5.31E-6 mg/kg_{dwt}	1.047 mg/kg_{dwt}	5.07E-6	1.07E4
Marine water	1.35E-7 mg/L	0.00064 mg/L	0.000211	257.083
Marine water sediment	5.29E-7 mg/kg_{dwt}	0.1047 mg/kg_{dwt}	5.05E-6	1.07E4

15.3.1.2 Terrestrial compartment

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
Agricultural soil	9.02E-8 mg/kg_{dwt}	0.3029 mg/kg_{dwt}	2.98E-7	1.61E6

15.3.1.3 Microbiological activity in sewage treatment systems

Compartments	PEC	PNEC	RCR = PEC/PNEC	MSafe kg/d
STP	0.000013 mg/L	18 mg/L	7.17E-7	7.56E4

15.3.2 Contributing Scenario (2) controlling consumer exposure for PC 9a
Consumer use of coatings and fillers (outdoor) General coatings

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	Exposure concentration (EC)	DNEL	Risk characterisation ratio = EC/DNEL
dermal longterm systemic	0.011416 mg/kg_{bw}/day	8.3 mg/kg_{bw}/day	0.001375
inhalation longterm systemic (Mean concentration yearly)	0.212928 mg/m^3	6.25 mg/m^3	0.034068
oral	-	-	-
Combined routes	0.050334 mg/kg_{bw}/day	-	0.035444

15.3.3 Contributing Scenario (3) controlling consumer exposure for PC 9b
Consumer use of coatings and fillers (outdoor) Fillers, putties

The quantitative risk characterisation for this consumer exposure has been calculated by EasyTRA.

The following table shows the exposure estimations via the oral, dermal and inhalatory route together with the total exposure of consumers over all routes.

Route	**Exposure concentration (EC)**	**DNEL**	**Risk characterisation ratio = EC/DNEL**
dermal longterm systemic	0.006849 mg/kg$_{bw}$/day	8.3 mg/kg$_{bw}$/day	0.000825
inhalation longterm systemic (Mean concentration yearly)	0.596485 mg/m^3	6.25 mg/m^3	0.095438
oral	-	-	-
Combined routes	0.115874 mg/kg$_{bw}$/day	-	0.096263

Annex I: ART-Report

Conditions for all uses described in table below:

Exposure time	480 min
Product type	liquid
Activity coefficient	1 (default)
Housekeeping in place	yes

PROC	**4**	**5**	**8a**	**8b**
Setting	Industrial	Industrial	Industrial	Industrial
Process temperature	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)
Vapour pressure	2,5 Pa	2,5 Pa	2,5 Pa	2,5 Pa
Liquid weight fraction	1	1	1	1
Viscosity	medium (like oil)	medium (like oil)	medium (like oil)	medium (like oil)
Near/Far field (NF/FF)	FF	FF	NF	NF
Activity class	Activities with agitated surfaces	Activities with agitated surfaces	Falling liquids	Falling liquids
Situation	Open surface > 3 m²	Open surface > 3 m²	Transfer of liquid product with flow of > 1000 L/minute	Transfer of liquid product with flow of > 1000 L/minute
Primary control measures	Low level of containment	None	None	Low level of containment
Secondary control measures	None	None	None	None
Work area	Indoors	Indoors	Indoors	Indoors
Room size and ventilation	Any size, 3 ACH	Any size, 3 ACH	Any size, 3 ACH	Any size, 3 ACH

Long-term Inhalative Exposure Estimate (upper limit of the interquartile confidence interval of the 75th percentil full-shift exposure)	0.2 mg/m^3	2 mg/m^3	4.5 mg/m^3	0.46 mg/m^3

PROC	9	8a	8a	10	10
Setting	Industrial	Professional	Professional	Professional	Professional
Process temperature	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)	Room temperature (15- 25 °C)
Vapour pressure	2,5 Pa	2,5 Pa	2,5 Pa	2,5 Pa	2,5 Pa
Liquid weight fraction	1	0.2	0.2	0.2	0.2
Viscosity	medium (like oil)	medium (like oil)	medium (like oil)	medium (like oil)	medium (like oil)
Near/Far field (NF/FF)	NF	NF	NF	NF	NF
Activity class	Falling liquids	Falling liquids	Falling liquids	Spreading of liquid products	Spreading of liquid products
Situation	Transfer of liquid product with flow of > 1000 L/minute	Transfer of liquid product with flow of > 1000 L/minute	Transfer of liquid product with flow of > 1000 L/minute	Spreading of liquids at surfaces or work pieces > 3 m² / hour	Spreading of liquids at surfaces or work pieces > 3 m² / hour
Primary control measures	None	None	None	None	None
Secondary control measures	None	None	None	None	None
Work area	Indoors	Indoors	Outdoors	Indoors	Outdoors
Room size and ventilation	Any size, 3 ACH	Any size, 3 ACH	-	Any size, 3 ACH	-
Long-term Inhalative Exposure Estimate (upper limit of the inter-quartile confidence interval of the 75th percentil full-shift exposure)	0.46 mg/m^3	0.91 mg/m^3	1.1 mg/m^3	0.31 mg/m^3	0.36 mg/m^3